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APPLICATION NUMBER: *60/562,456*
FILING DATE: *April 15, 2004*
RELATED PCT APPLICATION NUMBER: *PCT/US05/13039*

Certified by

Jon W. Dudas

Under Secretary of Commerce
for Intellectual Property
and Director of the United States
Patent and Trademark Office

PROVISIONAL APPLICATION COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION under 37 CFR 1.53 (c).

	DOCKET NUMBER	CRD5075PRV

INVENTOR(s) / APPLICANT(s)

LAST NAME	FIRST NAME	MIDDLE INITIAL	RESIDENCE (CITY AND EITHER STATE OR FOREIGN COUNTRY)
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TITLE OF THE INVENTION *(280 characters max)*

Retrievable Filter With Baskets

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ENCLOSED APPLICATION PARTS *(check all that apply)*

☒	Specification	*Number of Pages* 2	☐	Application Data Sheet	
☐	Claims	*Number of Claims*	☐	CD(s), Number	
☒	Drawing(s)	*Number of Sheets* 3	☒	Express Mail Transmittal Certificate	EK256795815US

METHOD OF PAYMENT *(check one)*

☐ A check or money order is enclosed to cover the Provisional filing fees.	Provisional Filing Fee Amount	$160.00
☒ The Commissioner is hereby authorized to charge filing fees and credit any overpayment to Deposit Account No. 10-0750		

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

☒ No

☐ Yes, the name of the U.S. Government agency and the Government contract number are:

Respectfully submitted,

SIGNATURE: _____ REGISTRATION NO. 35,958

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PROVISIONAL APPLICATION FILING ONLY

DOCKET NO. CRD5075

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): James H. Silver

Filed: April 15, 2004
For: Retrievable Filter With Baskets

Express Mail Certificate

"Express Mail" mailing number: EK256795815US

Date of Deposit: April 15, 2004

I hereby certify that this Provisional Application, including two pages and three drawing sheets, with Provisional Application cover sheet, is being deposited with the United Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450

Jose Laguardia

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Jose Laguardia

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RETRIEVABLE FILTER WITH BASKETS

Provisional Patent Application

Description of the Invention:

Prior vascular filters have a demonstrated track record of filtering clots due to their filter basket design. However, filters may not be retrievable for the long term, because of the tendency for neointimal tissue to grow over the parallel struts, and cause the filter to become mechanically interlocked with the tissue. When the tissue develops sufficient strength, the filter may no longer be retrievable. For some prior retrievable filters, this may occur somewhere between 2 and 3 weeks following implantation.

There are several connection points where a filter can become interlocked with tissue, depending on the size of the vena cava or other body passage in which the device is placed. These include parallel struts between front and back filter baskets, at a shoulder or the filter basket, and at a diamond bifurcation (see Figure 1).

In order to retain the clot capturing capabilities of the filter baskets, these new filter baskets may be formed by laser-cutting a series of straight, parallel struts, and then shape-setting them in a way so that they closely resemble the filter baskets (see Figure 2). By forming the baskets from straight, parallel struts, all connections are removed so that the filter tends not to become interlocked with tissue, and is therefore retrievable for a longer time or possibly an indefinite period. It may also be desirable to have a filter which consists of two of these filter baskets, one caudal and one cranial, in order to prevent the filter from tilting. Further, in order to facilitate retrievability, it may also be desirable to connect both filter baskets in the middle, and for both filters to be sloped in the same manner as the caudal basket of the filter. In this manner, the outer legs of the filter can act as anchors to prevent migration of the filter.

This filter design provides the demonstrated clot capturing ability of the filter, but which are shaped from unconnected, straight parallel struts, which allow the filter to be removed from the tissue at a selected time without a tendency for affecting the vessel wall. This is because these struts are not physically connected to each other, and can separate during retrieval.

In addition, this type of filter is compatible with a bi-directional retrieval system that has been described. Because the filter struts are not physically attached to each other, as is the case with prior filters, the catheter can be inserted through the windows of the flower basket, without risking entanglement of the catheter (see Figure 3). If the retrieval catheter is inserted within one of the windows of the flower basket, the window of the flower basket can be opened, as shown in Figure 3, to allow the retrieval catheter to slip through.

It is possible to change the filter basket by adding or subtracting even numbers of struts, so that the number of windows within the flower basket changes from 6 to 5, 7, or some other number. It is also possible to change the direction that the flow baskets face. That is, the cranial basket can be oriented in the same direction as the cranial basket on another filter.

Inventor

As currently described in this provisional application, the inventor of the present invention is believed to be as follows:

James H. Silver

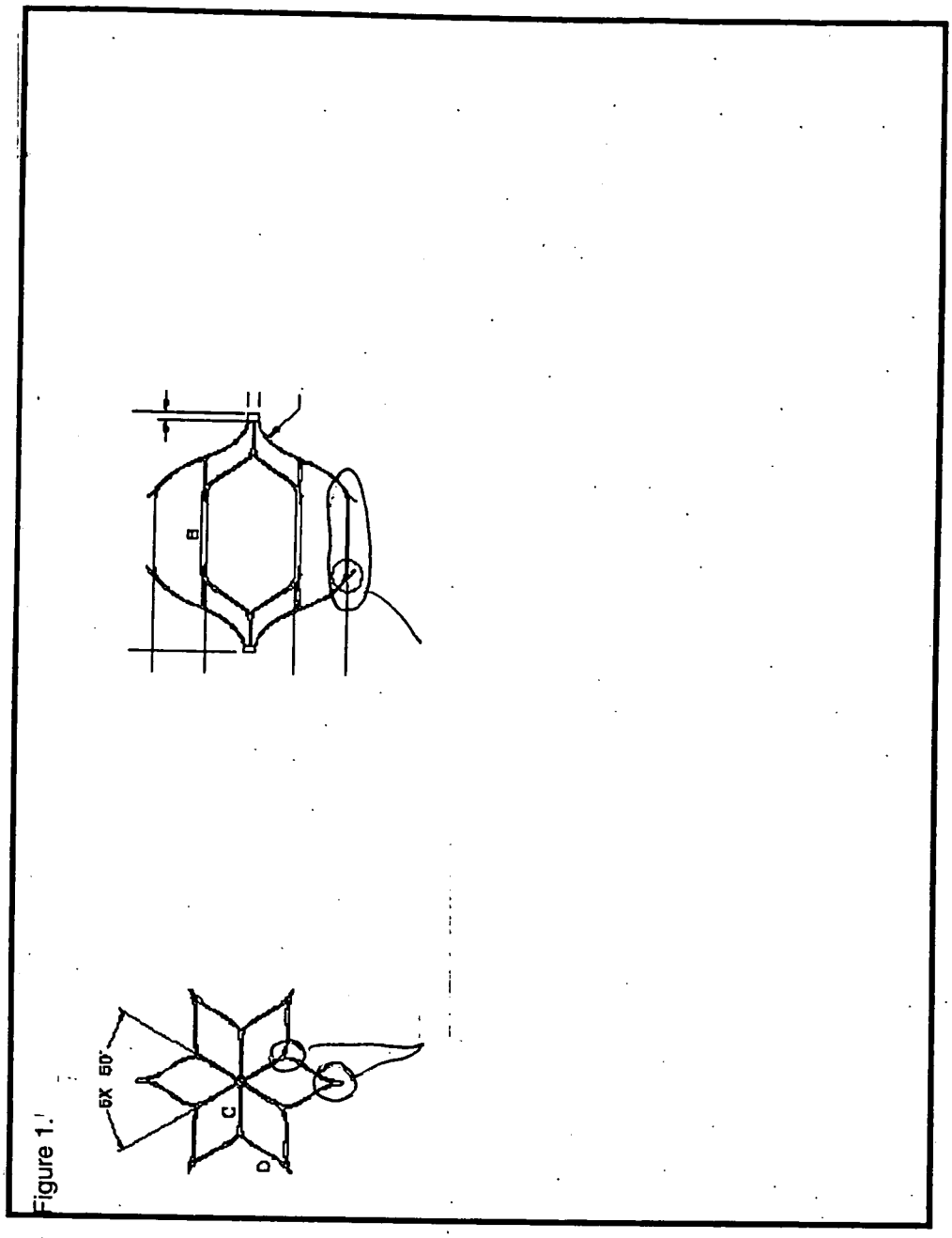
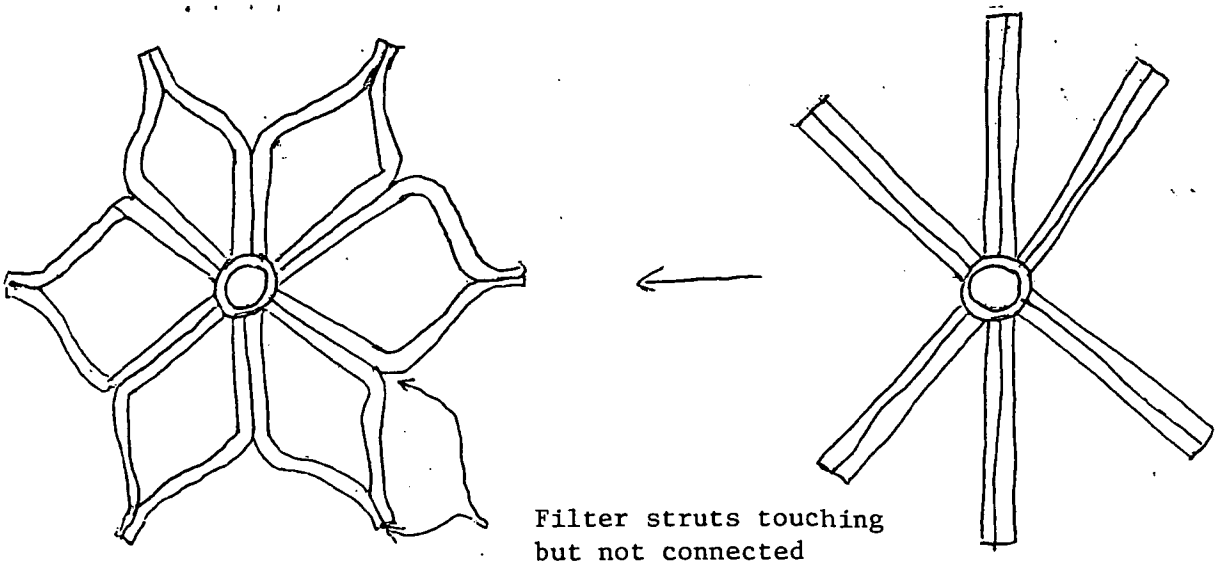


Figure 1.

Figure 2: Front view of Retrievable Flower Basket



Filter struts touching
but not connected

6 pairs of straight, parallel
struts (12 struts)

12 Struts shape set into a
TrapEase filter basket configuration

Side View

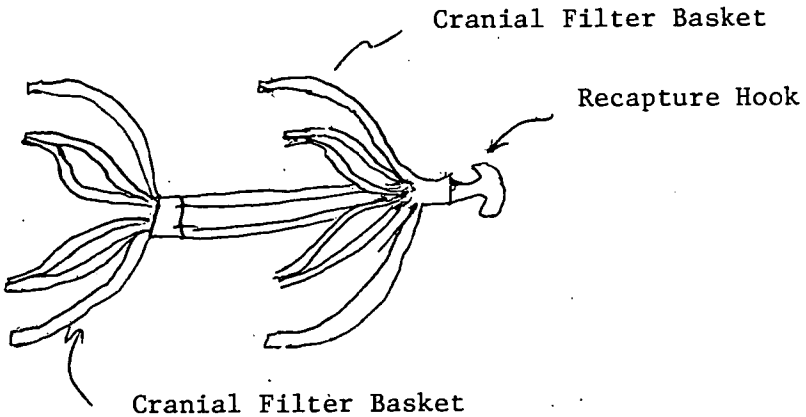
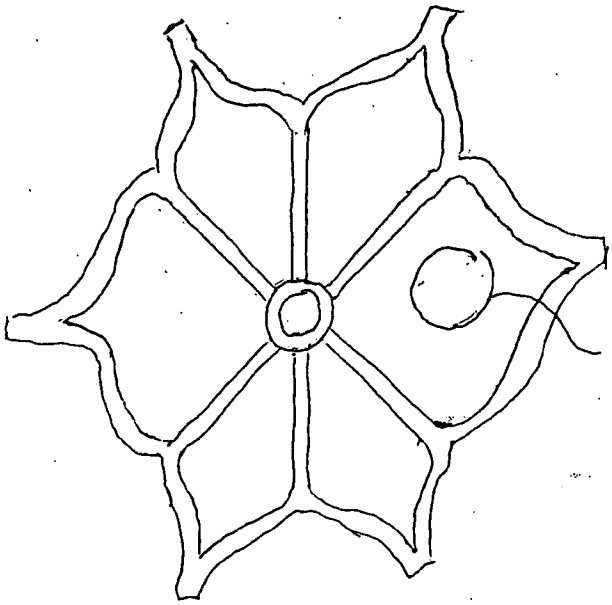
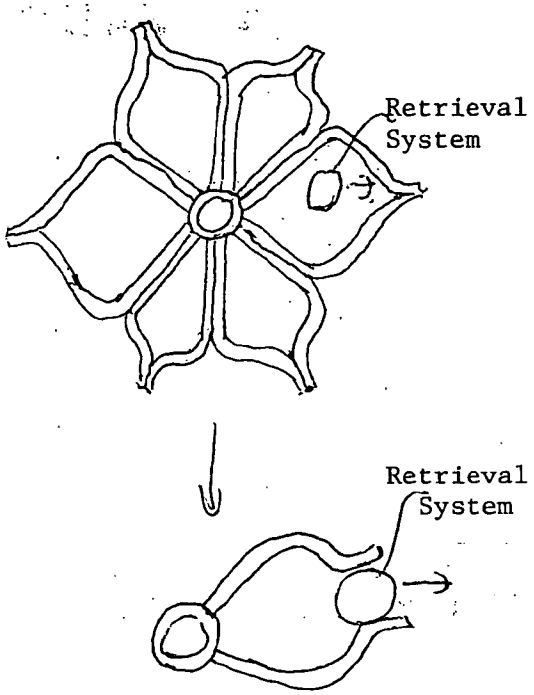


Figure 3: Removal of Filter with Two-way Retrieval System



OptEase Filter with two-way retrieval system. Basket is formal so that it can become entangled with retrieval system.



Novel Filter Basket can be retrieval/removed from around retrieval system as shown.